STRUCTURE OF AcrA ON A LIPID MONOLAYER. S. Misaghi, A.J. Avila-Sakar, E. Wilson-Kubalek, H. Zgurskaya, H. Nikaido, K.H. Downing, R.M. Glaeser and E. Nogales. Lawrence Berkeley National Laboratory, Berkeley, CA, Scripps Research Institute, La Jolla, CA, and University of California, Berkeley, CA.

The multi-drug efflux complex AcrAB-TolC confers drug resistance in *E. coli* by pumping antibiotics out of the cell. We determined a 20 Å resolution structure of the periplasmic component AcrA by electron crystallography of negatively stained specimens. Expressed with a HIS-tag, the protein bound to a lipid monolayer containing the nickel-chelating phospholipid DOGS-NTA. Under the monolayer, AcrA crystallized in layer group $P2_122$, with a unit cell size of 157 by 95 Å, and a thickness of about 100 Å. The unit cell contains two identical coiled structures, each with a length of about 210 Å over approximately 1 1/2 turns around a central hole 30 Å in diameter. According to the space group, the asymmetric unit would be 1/2 of a coiled structure, or 1/4 of the unit cell. A simple interpretation of the map is that each coiled structure is a dimer, with the monomers intertwinned in an antiparallel fashion, possibly mediated by a region of the sequence that is predicted to have a high propensity to form coiled coils.